

†Electronic Supplementary Information (ESI)

**Nano thick poly ( $\epsilon$ -caprolactone)-poly (ethylene glycol) coatings developed by catalyst free plasma assisted copolymerization process for biomedical applications**

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Fig S1 Experimental Set up for plasma copolymerization

Fig S2 Flow rates of  $\epsilon$ -CL and DEGME precursor molecules in the plasma reactor as a function of carrier gas (Ar) flow rate at 0.5 mbar pressure.

Fig S3 FTIR-ATR spectra of  $\epsilon$ -CL and DEGME liquid monomer (measurement volume was 40 $\mu$ L each)

Fig S4 FTIR-ATR spectra of PCL-co-PEG (1:4) coatings deposited at (a) 50W CW (b) 20W CW (c) 0.25W PW and (d) 1W PW

Fig S5 FTIR-ATR spectra of pulsed plasma polymerized PCL, pDEGME and PCL-co-PEG coatings deposited at  $P_{\text{eff}} = 1\text{W}$ .

Fig S6 Enlargement of the MALDI-ToF mass spectrum (210-370 Da) of plasma polymerized PCL-co-PEG coating prepared in alpha-matrix.

Fig S7 Enlargement of the MALDI-ToF mass spectrum (370-550 Da) of plasma polymerized PCL-co-PEG coating prepared in alpha-matrix.

Fig S8 Microscopic images of HBMEC cell adhesion and proliferation on plasma polymerized coatings for 24, 48 and 72 hrs of cell culture. Bare glass and PS plate were taken positive control.

## Experimental set up for plasma copolymerization

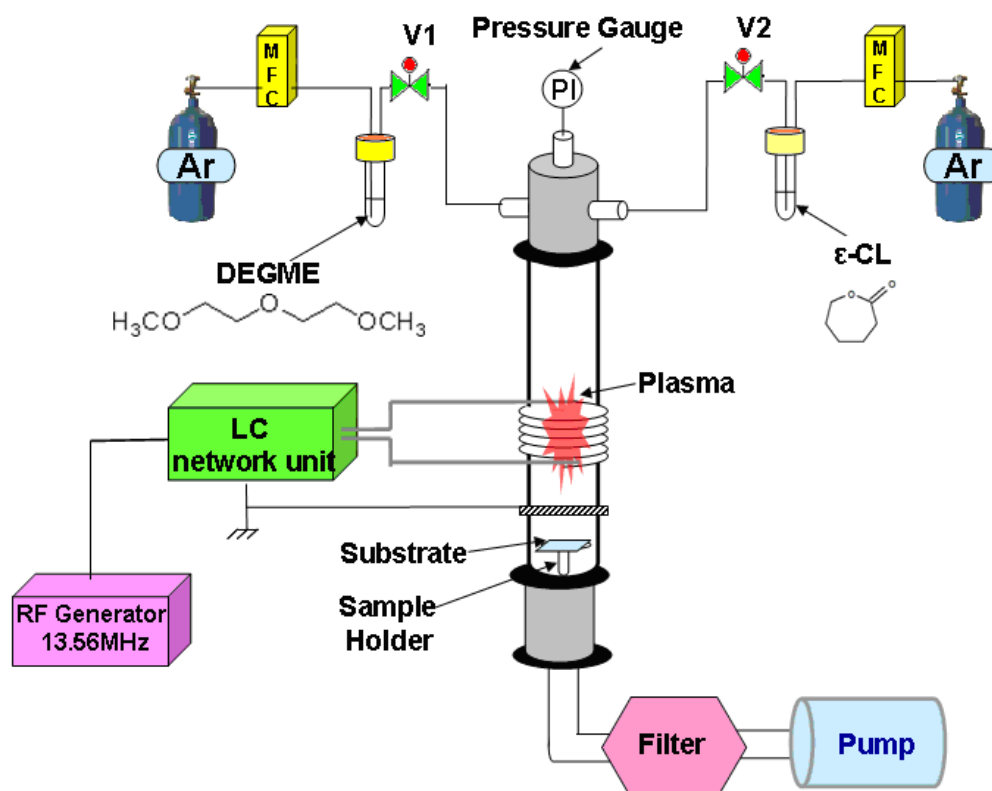
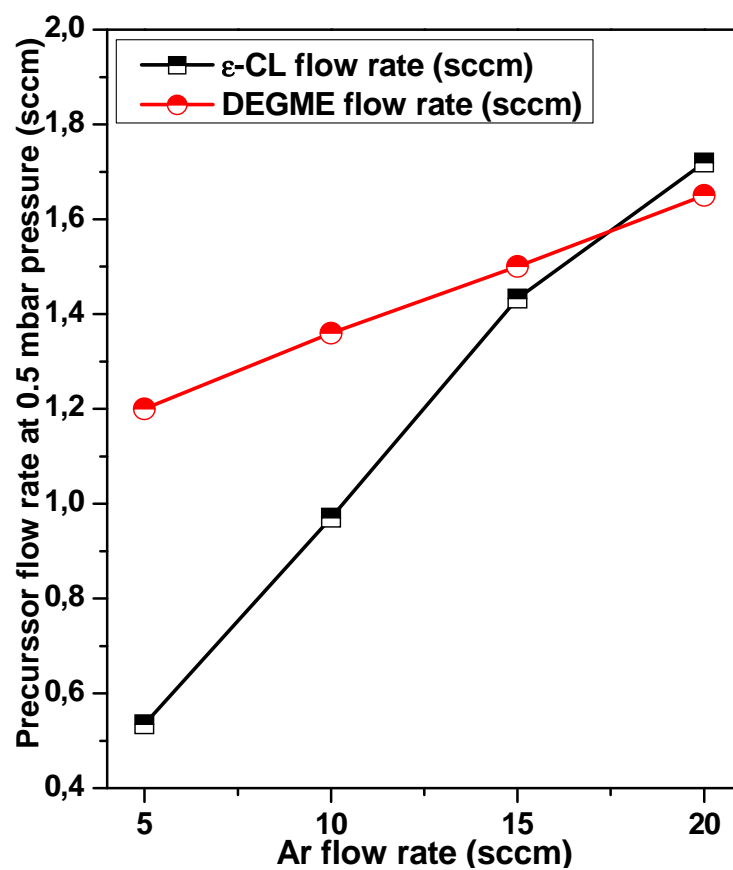
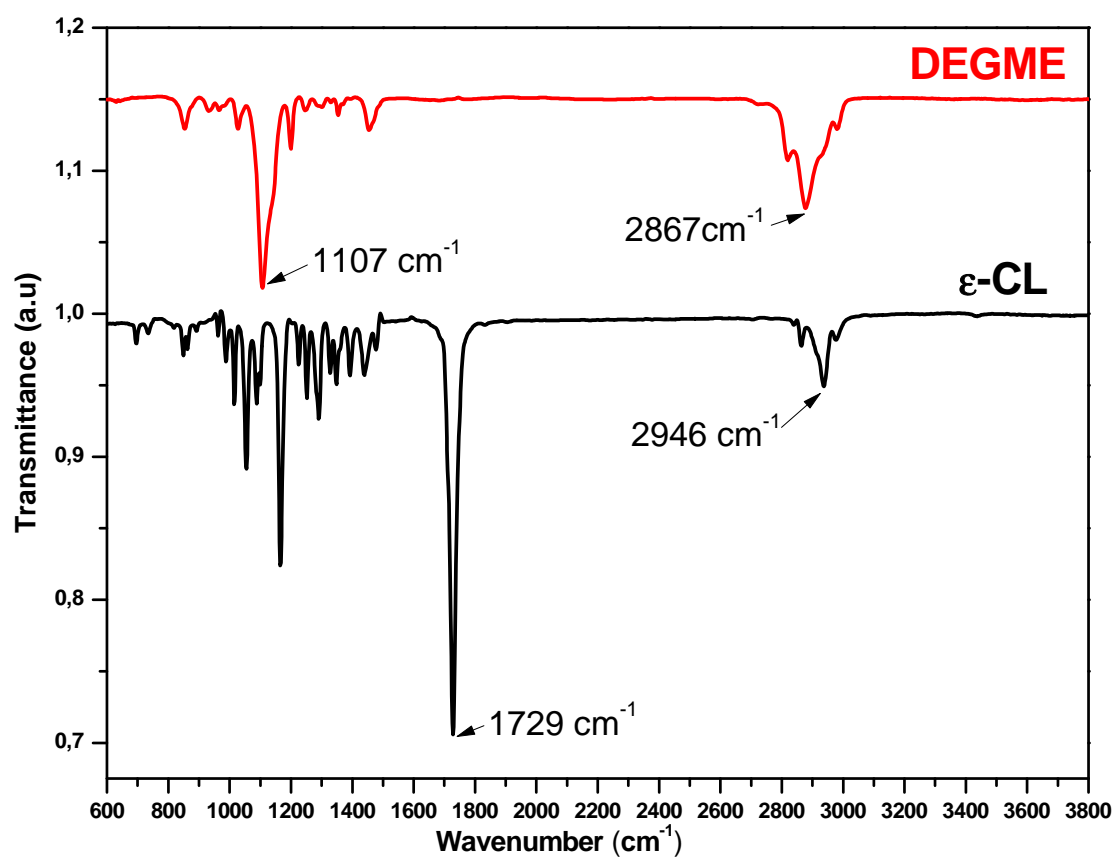


Fig S1 Schematic diagram of the low pressure inductively excited RF tubular plasma reactor set-up for copolymerization.



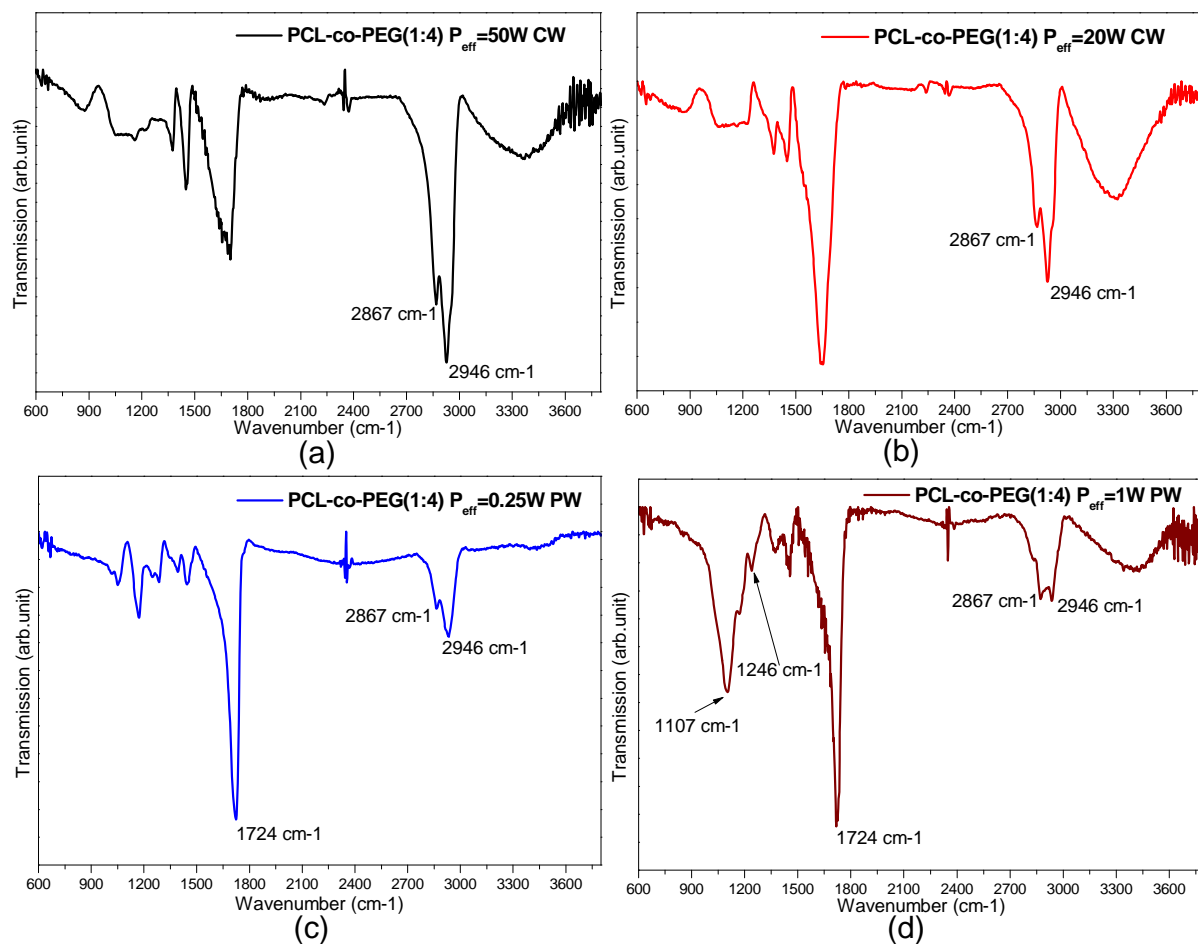
**Fig S2** Flow rates of  $\epsilon$ -CL and DEGME precursor molecules in the plasma reactor as a function of carrier gas (Ar) flow rate at 0.5 mbar pressure.

### FTIR-ATR spectra of $\epsilon$ -CL and DEGME liquid monomer



**Fig S3 FTIR-ATR spectra of  $\epsilon$ -CL and DEGME monomer (measurement volume was 40 $\mu$ L each)**

## FTIR Spectra of plasma polymerized PCL-co-PEG coatings at different effective power



**Fig S4 FTIR-ATR spectra of PCL-co-PEG (1:4) coatings deposited at (a) 50W CW (b) 20W CW (c) 0.25W PW and (d) 1W PW**

Detailed FTIR-ATR Spectra of plasma polymerized coatings deposited at  $P_{\text{eff}}=1\text{W}$  for different  $\epsilon\text{-CL}:\text{DEGME}$  ratio

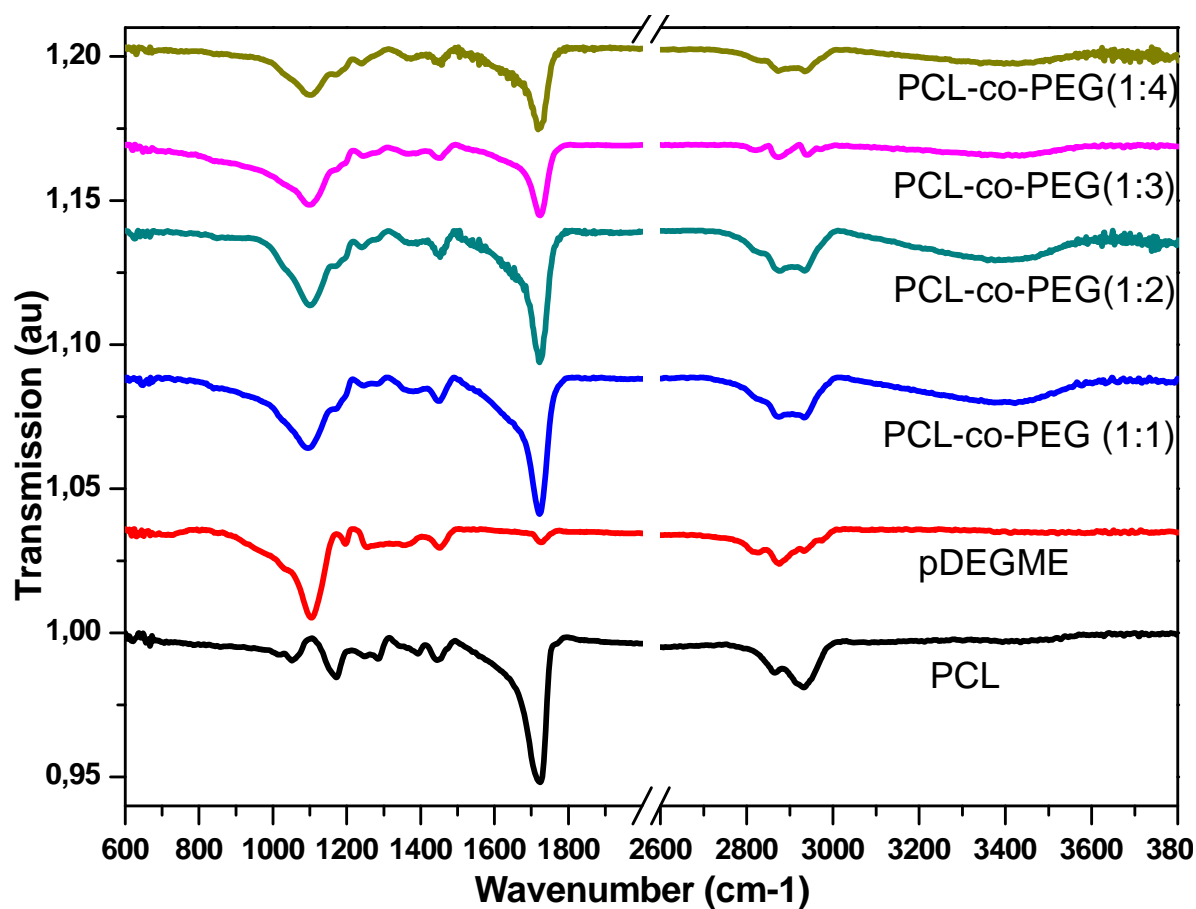


Fig S5 FTIR-ATR spectra of pulsed plasma polymerized PCL, pDEGME and PCL-co-PEG coatings deposited at  $P_{\text{eff}} = 1\text{W}$ .

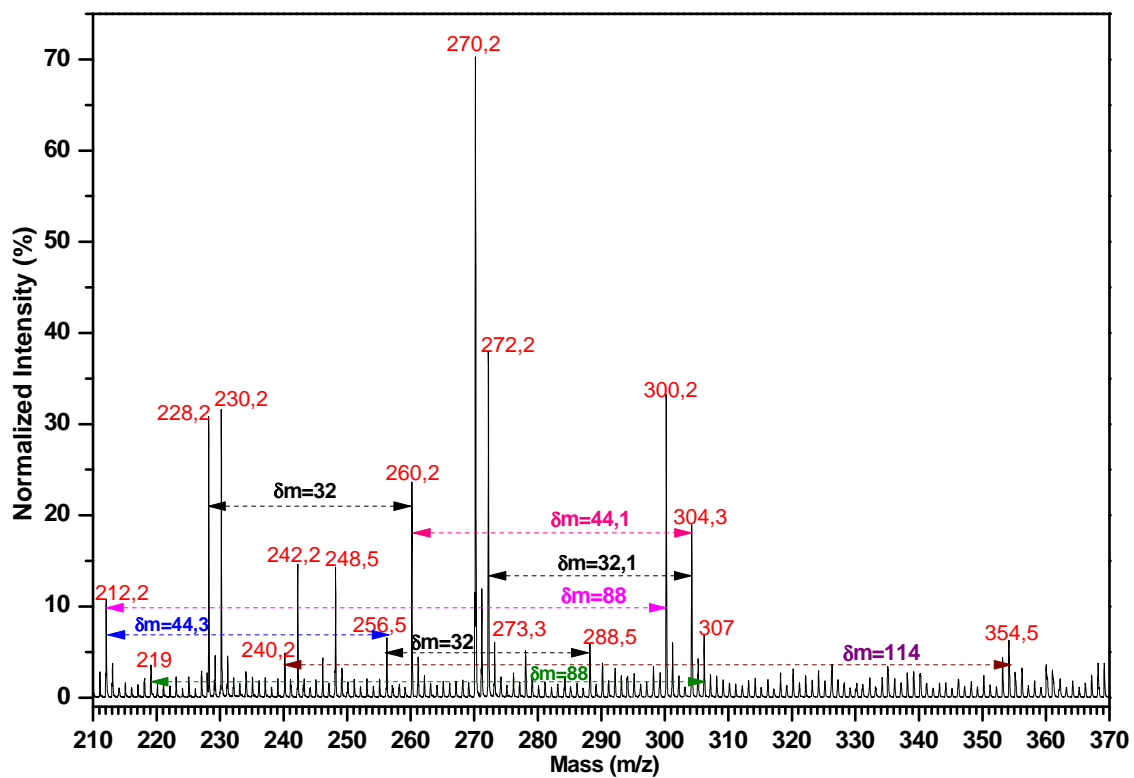
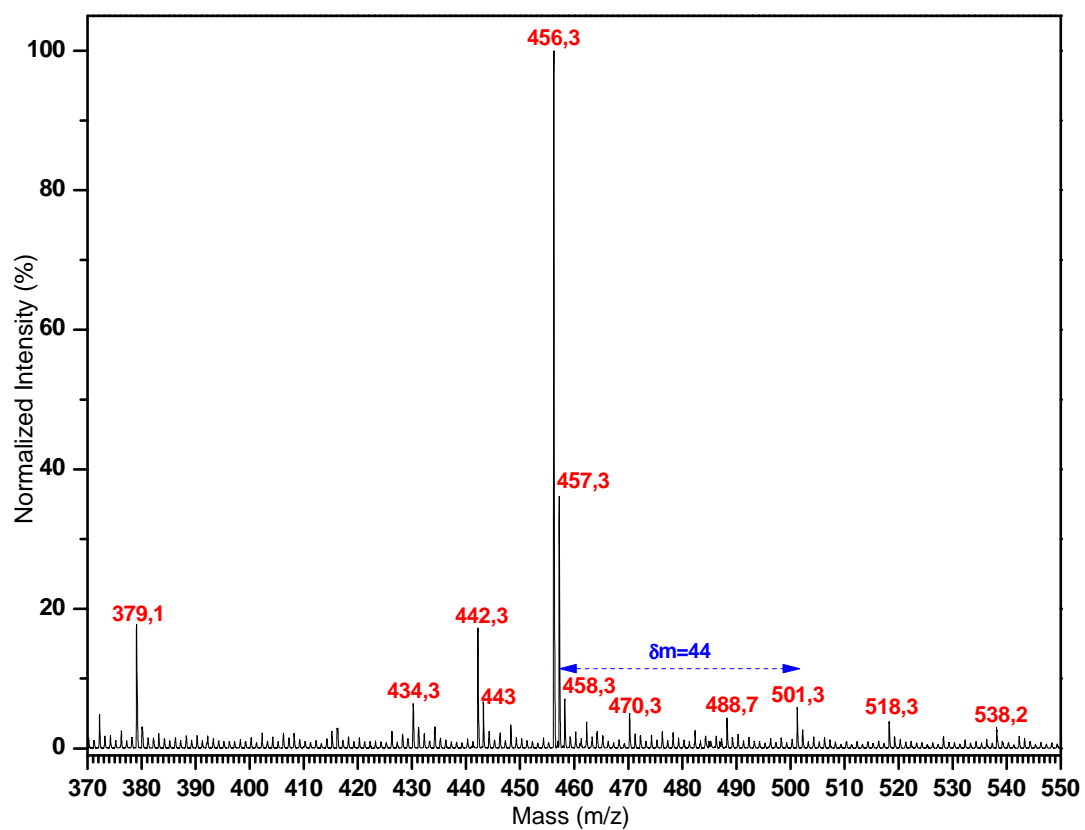


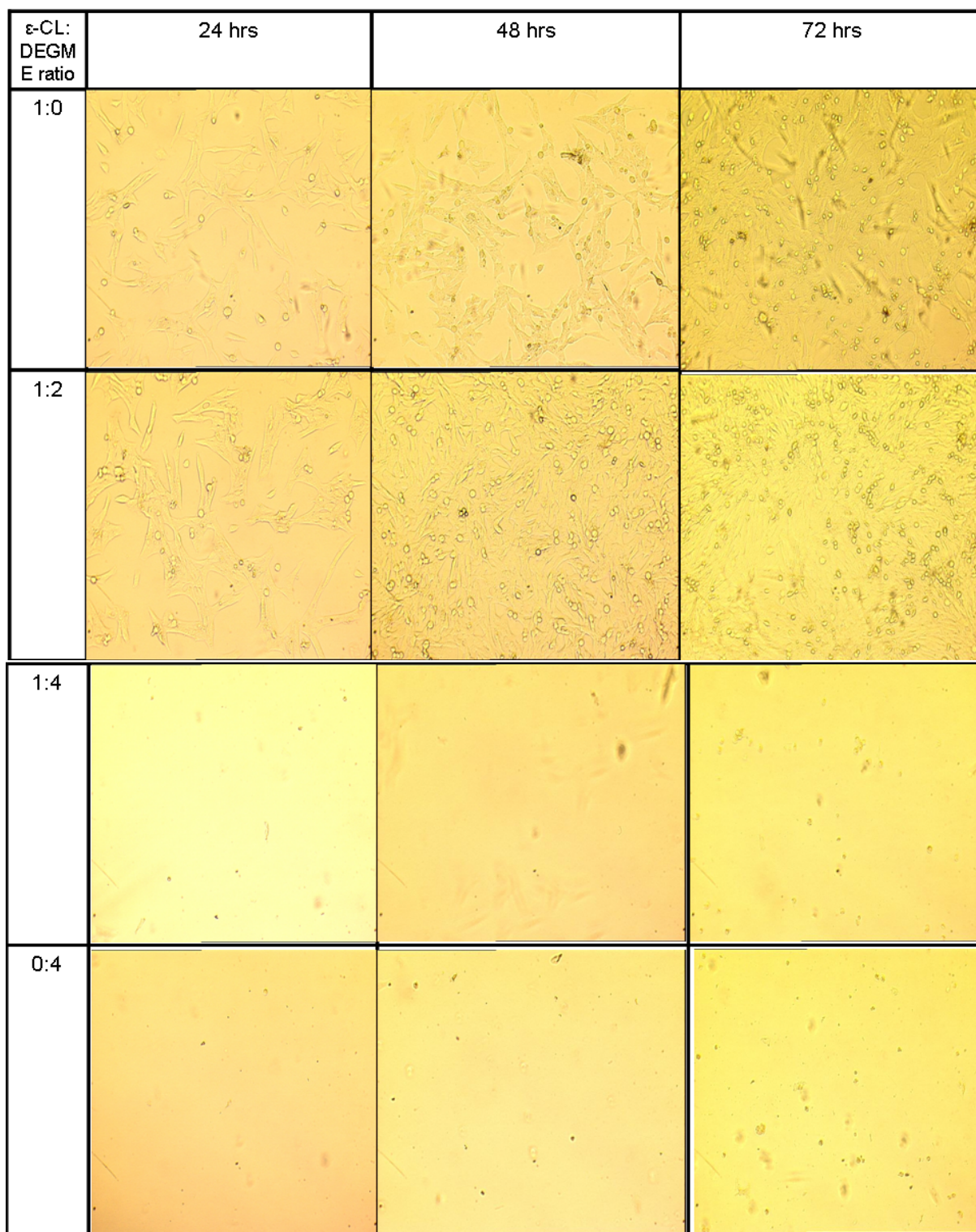
Fig S6 Enlargement of the MALDI-ToF mass spectrum (210-370 Da) of plasma polymerized PCL-co-PEG coating prepared in alpha-matrix.

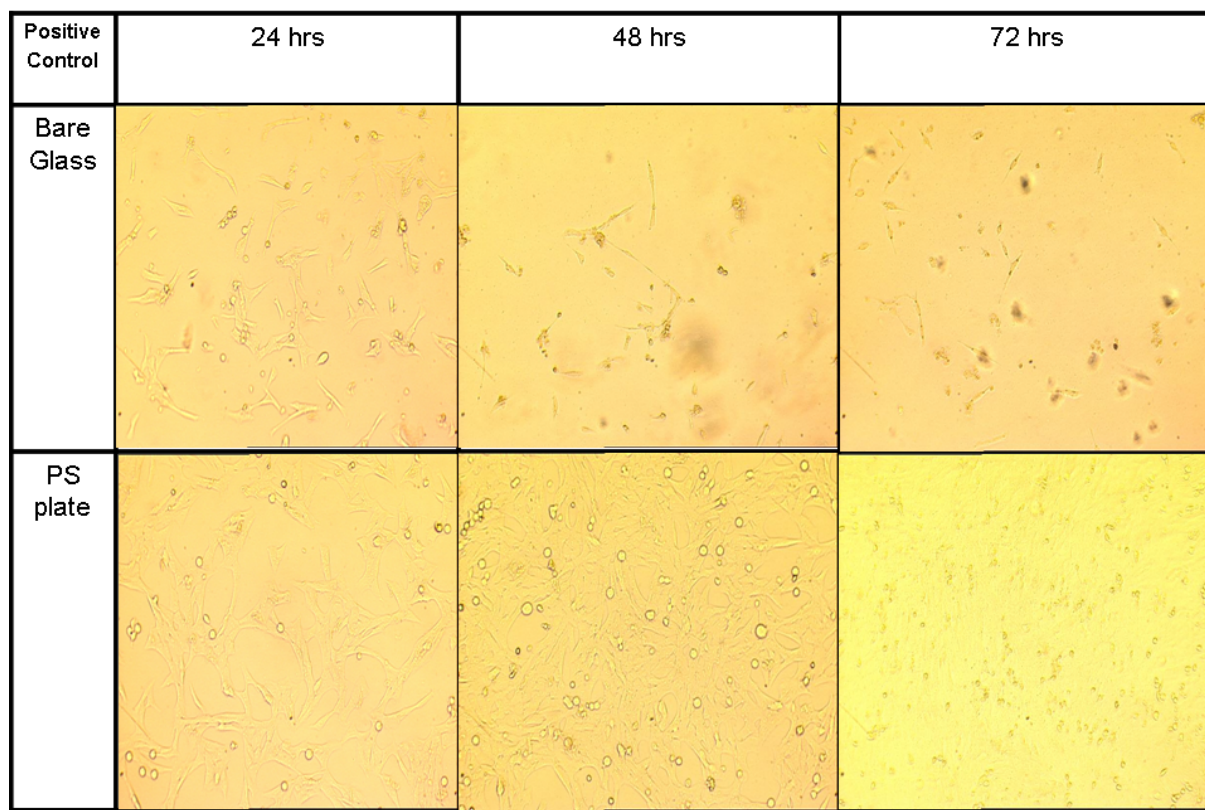


**Fig S7** Enlargement of the MALDI-ToF mass spectrum (370-550 Da) of plasma polymerized PCL-co-PEG coating prepared in alpha-matrix.



### HBMEC cell adhesion and proliferation on plasma polymerized coatings





**Fig S8 Microscopic images of HBMEC cell adhesion and proliferation on plasma polymerized coatings for 24, 48 and 72 hrs of cell culture. Bare glass and PS plate were taken as positive control (Optical Magnification: 10X)**